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EDITOR'S NOTES

The Seed Regulatory and Testing Branch (SRTB) would like to welcome you to this issue of the Items of Interest in Seed (IOI). Whether you are a long time subscriber of the publication or a new subscriber, we appreciate your interest in the work performed by the SRTB staff. In this issue, we would like to highlight several articles that may be of particular interest to you.

This issue begins with information on the training sessions we have recently provided on variety testing and on sampling. As interest grows in the area of accreditation and quality assurance, we announce the expansion of the accreditation program to include sampling and field inspection (p. 4). The testing staff have contributed several articles about activities in the laboratory, including variety testing, seed pathology, tetrazolium testing, and blower calibration. Our front office staff have provided helpful information on submitting samples for service testing (p. 10) and submitting Federal Seed Act complaints (p. 12). There are several articles about Federal Seed Act enforcement, notably Seed Marketing Specialist Gene Wilson's analysis of "Timeliness in Seed Violation Cases" (p. 13). Recent staff changes and our complete staff directory are on pp. 20 and 22.

We hope that you will find this issue informative and useful. If you have any comments regarding this issue of "Items of Interest in Seed" or suggestions for future issues, please send them to Seed Marketing Specialist Linda Vanderhoof (linda.vanderhoof@usda.gov).

SUBSCRIPTION UPDATE

The Seed Regulatory and Testing Branch Web site (http://www.ams.usda.gov/lsg/seed.htm) has links to our publications, including current and past issues of the Items of Interest in Seed (IOI). An electronic subscription option is available on our home page. This subscription is an e-mail service which provides notification when publications are issued or changed. The e-mail notification includes the option of unsubscribing or viewing the publications.

Recently, it came to our attention that subscribers have not been receiving the IOI notification messages for some time. The problem has been resolved and all subscribers will receive an e-mail notification when we publish new issues of the IOI to the Web site.

For information regarding this article, contact Seed Marketing Specialist Jeri Irwin at (704) 810-8878; jeri.irwin@usda.gov.

VARIETY TESTING WORKSHOPS

The Seed Regulatory and Testing Branch (SRTB), in conjunction with the AMS's National Science Laboratory, conducted two workshops on variety testing during the weeks of August 14-18 and August 21-25, 2006. The training was held at the SRTB's laboratory in Gastonia, NC. The training consisted of approximately 25 percent lecture and 75 percent hands-on laboratory work. The testing approaches covered evaluation of seed characteristics, rapid chemical tests, seedling growth tests, herbicide resistance tests, DNA testing procedures, and immunological type tests, including antibody strip tests and ELISA tests. The crops covered included wheat, tall fescue (Kentucky 31 and turf varieties), brassicas (including collards and rape), and alfalfa. Forty seed analysts from State seed laboratories attended the training. The purpose of this type of training is to provide assistance to State seed control programs in various aspects of seed testing in conjunction with Federal Seed Act (FSA) enforcement. These training activities are

authorized by the Cooperative Agreement for FSA enforcement between AMS and each of the 50 State Departments of Agriculture.

For information regarding this article, contact Branch Chief Richard Payne at (704) 810-8884; richard.payne2@usda.gov.

SEED SAMPLING WORKSHOPS

The Seed Regulatory and Testing Branch (SRTB), in conjunction with the Idaho Department of Agriculture and the California Department of Food and Agriculture, presented three two-day seed sampling workshops. The first workshop was held September 6-7, 2006, in Boise, ID. The other workshops were held September 18-19 in Oxnard, CA and September 21-22, in Woodland, CA. The purpose of the workshops was to provide training to Idaho Department of Agriculture and California Department of Food and Agriculture personnel and their representatives in sampling seed to obtain officially drawn samples requested by Idaho and California seed companies for testing by the SRTB and subsequent issuance of USDA Seed Analysis Certificates.

The first day of training included classroom instruction and discussion. The second day included demonstration and participation in sampling at a local seed company. Topics covered in the training included:

AOSA, FSA, and ISTA sampling procedures
Planning and execution of sampling
Sampling documentation
Common sampling documentation errors
Sampling small containers
Sampling bin and bag lots
Sampling bulk containers
Sealing, labeling, and shipping samples
Proper sampling equipment

Successful completion of the training authorized participants to officially sample seed for Idaho and California seed companies who request testing and USDA Seed Analysis Certificates from the SRTB. The training was presented by SRTB Seed Marketing Specialist Roger Burton and Branch Chief Richard Payne.

Beginning on January 2, 2007, all samples that are listed as being "official samples" on USDA Seed Analysis Certificates must be drawn by an authorized sampler who successfully completed the training.

The SRTB has scheduled another sampler workshop to be held in Colorado, November 1-2, 2006.

For information regarding this article, contact Branch Chief Richard Payne at (704) 810-8884; richard.payne2@usda.gov.

PRESENTATIONS AT AASCO

Seed Regulatory and Testing Branch (SRTB) Chief Richard Payne, Seed Marketing Specialists Roger Burton and Kevin Robinson, and Agronomist Mike Lovelace attended the 20th annual meeting of the Association of American Seed Control Officials (AASCO) in Billings, MT, July 22-

27, 2006. Members of 23 States, the Canada Food Inspection Agency, Canadian Seed Growers Association, affiliated organizations, seed company representatives, and others also attended the meeting.

Dr. Lovelace was an invited speaker on the topic "Testing for Genetic Purity and Traits - Training, Personnel, and Equipment Requirement." His presentation outlined the prerequisites for setting up a trait testing laboratory for detection at the bioassay level, protein level, and DNA level.

Dr. Payne was on a panel discussing "Back to Basics - Variety Labeling Approaches." This panel discussion focused mostly on brand vs. variety labeling, and included other areas regarding basic label requirements. In addition, Dr. Payne gave a presentation on tolerances.

The members approved the "AASCO Handbook on Seed Sampling." Several SRTB staff members contributed to this handbook. AASCO members also approved the Accredited Seed Sampling Program (ASSP). The ASSP, along with the handbook, is being submitted to USDA's Audit, Review, and Compliance Branch for its Process Verified Program.

More information about the AASCO is available at their Web site: www.seedcontrol.org.

ACCREDITATION PROGRAM EXPANDS

Effective October 1, 2006, the Accredited Seed Sampling Program and the Accredited Field Inspection Program are being implemented. These programs were developed and established through the combined efforts of the Association of American Seed Control Officials, the Association of Official Seed Certifying agencies, and USDA. Seed samplers and field inspectors who successfully participate in these programs will be considered USA Accredited Seed Samplers and/or USA Accredited Field Inspectors.

The implementation of these two programs completes a process begun with the creation of the USA Accredited Seed Laboratory Program in 2005. The objectives of all three programs are to provide uniformity of procedures and methodology for inspecting fields, and sampling and testing seed. Through the standardization of processes and adherence to each program's requirements, commerce in seed both domestically and globally should be enhanced. These three programs operate under the program requirements and quality standards of the Process Verified Program.

The requirements of these programs can be found on the Seed Regulatory and Testing Branch Web site.

For information regarding this article, contact OECD Program Manager Perry Bohn at (704) 810-7262; perry.bohn@usda.gov.

AUTHORIZATION OF OECD SEED SCHEMES ACTIVITIES

USDA AMS has made the decision to authorize some of the U.S. OECD Seed Scheme activities to be performed by private individuals or entities operating under an ISO-based Quality Management System. For more information, see details at: http://www.ams.usda.gov/news/170-06.htm, or contact OECD Program Manager Perry Bohn at (704) 810-7262; perry.bohn@usda.gov.

INFLUENCE OF THE ENVIRONMENT ON VARIETY TESTING

Environmental Effects on Seed Characteristics

The environment in which a plant is grown greatly impacts the seed produced by that plant. While the effects of environment on seed quality have been thoroughly documented, much less has been focused on the effects that the environment has on the physical characteristics of seed. The environmental conditions during seed development can greatly influence the appearance of the seed at maturity. In wheat seed, yellow berry is a condition that is commonly found. Yellow berry refers to the non-vitreous, chalky, opaque form of the wheat kernel. Individual wheat kernels may be vitreous (natural translucent coloring), non-vitreous (yellow berry; opaque chalky coloring), or have varying proportions of each. These differences in kernel appearance are highly correlated with protein content of the seed. Yellow berry seeds can vary in appearance and look similar to soft red and soft white wheat seeds. Low levels of yellow berry seeds are present in most varieties, but the environmental conditions at grain fill can also influence the level of yellow berry seeds. Although varieties differ somewhat in their predisposition to yellow berry, the over-riding cause relates to nitrogen fertility and, secondarily, to stresses on the wheat plant. In general, the lack of nitrogen available during later grain filling coupled with stresses such as high moisture and low temperature can increase the incidence of yellow berry seeds.

In years when environmental stresses are greater during grain fill, more yellow berry seeds are generally observed. This can be a problem for two reasons. First, seed lots with higher levels of yellow berry seeds are regarded as lower quality. Second, these yellow berry seeds can be misidentified as other classes of wheat seeds. Samples of hard red winter wheat containing high levels of lightly colored yellow berry seeds were submitted to the Seed Regulatory and Testing Branch with suspicion of containing soft white wheat as a contaminant. All seeds subjected to the NaOH test were dark stained indicating these seed were yellow berry seeds and not soft white wheat. In addition, protein gel electrophoresis determined that these yellow berry seeds had the same protein fingerprint as normal vitreous seeds. This is one example of how the environment impacts seed characteristics.

Frost, standing water, drought, temperature, insect, disease, and nutrient imbalance are some examples of environmental conditions which may also change the appearance of seed at maturity. Furthermore, stresses are not consistent throughout a field, thus the appearance of seeds in a seed lot will not generally be uniformly affected. It is important to understand that environment can greatly affect the phenotype of a seed. In addition, not all seeds in a seed lot may have a uniform appearance, thus analysts need to be aware that phenotypic differences can be induced by environment.

Environmental Effects on Trait Function in Developing Seedlings

Clearfield® rice and wheat plants have naturally occurring (non-biotechnology derived) resistance to the imidazolinone (Newpath, Beyond, Pursuit, etc.) class of herbicides. Although these crops are resistant to the imidazolinone herbicides, field inspectors have observed injury when these herbicides have been applied to these Clearfield crops. Questions often arise as to whether the crop was correctly labeled. Recently, Clearfield rice samples were submitted to the Seed Regulatory and Testing Branch for herbicide tolerance testing. Under field conditions, these samples were severely injured. After evaluating the seed in various bioassay tests, the seed responded similarly to a certified check sample of the same variety. This raises the question of what exactly happened and why.

Environmental conditions play a critical role in the function of many traits in developing seedlings. One specific trait of interest that can be influenced by environment is herbicide tolerance. Seed growers often try to plant their crops as early in the season as possible to take advantage of early season moisture. On occasion, a grower may experience extended periods of cold temperatures and rainy conditions. These conditions will often slow the metabolic function and growth of the plants. It is the metabolic function of plants that allows them to tolerate herbicides; thus, as the metabolic functions of the plant are slowed, so is the ability of the plant to deal with herbicides. If cool wet conditions persist for a short time, crops will often outgrow injury with little to no effect on seed yield and quality. Conversely, if the plants remain stressed for long periods of time (a few weeks), plant death can occur.

This summer, the entire country has experienced abnormally hot conditions. These conditions can also cause enzyme systems of plants to shut down. Plants sprayed with a herbicide in the summer months where temperatures may be greater than 95° F have a greater potential for injury than those sprayed in milder conditions. Again, enzyme systems above 95° F begin to shut down, thus the ability of plants to deal with herbicides is compromised. When inspectors view fields that appear to be injured with herbicide, they should not immediately conclude that the crop is mislabeled. There are many other factors that must be considered. The environment can cause many variations in the appearance of seeds and developing seedlings, thus should always be considered when observations do not appear to be normal.

For information regarding this article, contact Agronomist Mike Lovelace at (704) 810-7261; michael.lovelace@usda.gov.

PLANT PHYSIOLOGY LABORATORY INTRODUCTION - PART II

In the April 2006 Items of Interest in Seed we described the variety testing activities of our plant physiology laboratory and how those methods are applied at the Seed Regulatory and Testing Branch (SRTB). Part I described the method used in the SDS-PAGE type of protein electrophoresis. In this issue, we describe isoelectric focusing (IEF) and an innovative dual-staining method enabling two types of color bands to show on the gel.

Isoelectric Focusing Gel

IEF is an electrophoretic method that separates proteins according to their isoelectric points (pI). Proteins are amphoteric molecules; they carry either positive, negative, or zero net charge, depending on their amino acid composition and the pH of their surroundings. The net charge of a protein is the sum of all the negative and positive charges of its amino acid side chains and amino- and carboxyl-termini. The pI is the specific pH at which the net charge of the protein is zero. Proteins are positively charged at pH values below their pI and negatively charged at pH values above their pI.

There are three main types of IEF gels used in the laboratory: the tube gel, the horizontal ultra-thin agarose gel, and the vertical polyacrylamide gel. The tube IEF gel was developed a number of years ago when electrophoresis was first used in laboratory testing. The tube gel has many advantages: the equipment is simple, large samples can be loaded, and the gels are compatible for two-dimensional electrophoresis. The ultra-thin agarose gel is highly adaptable for testing a wide range of different crop species. This type of gel has high resolution and a large number of sample wells per gel. The vertical polyacrylamide IEF gel is a more recent development. This type of gel is easy to use and widely used for research projects.

The presence of a pH gradient is critical to the IEF technique. In a pH gradient, under the influence of an electric field, a protein will move to the position in the gradient where its net charge is zero. If a protein should diffuse away from its pI, it immediately gains charge and migrates back to its isoelectric position. This is the focusing effect of IEF, which concentrates proteins at their pIs and separates proteins with very small charge differences. Because the degree of resolution is determined by electric field strength, IEF is performed at high voltages (typically in excess of 100 to 1000 V).

Based on the principle of IEF gel, the proteins in the IEF gel are separated by un-denatured molecular structure which still maintains the enzyme activity. Enzyme staining methods that are suitable for IEF gels include those for identifying esterase, peroxidase, and malate dehydrogenase iso-enzymes. However, enzyme staining is very specific for one type of enzyme, and usually only one to several iso-enzyme bands appear on the gel.

SRTB Plant Physiologist Yujia Wu recently developed a dual-staining method in a vertical IEF gel system for tomato and tall fescue variety testing. He created a semi-fixation method to fix the gel, followed by staining for a specific enzyme. After the enzyme staining is completed, the gel is rinsed well and placed in a Commassie solution for total protein staining. With this dual staining procedure, two types of color bands can be observed on the gel. The brown colored bands are esterase iso-enzymes and the blue colored bands are protein bands. The dual staining procedure can provide a quicker and less expensive way to use electrophoresis to help distinguish varieties.

For information regarding this article, contact Plant Physiologist Yujia Wu at (704) 810-7267; yujia.wu@usda.gov.

RYEGRASS ROOT FLUORESCENCE

The ryegrass root fluorescence test has been used to distinguish between seeds of perennial (Lolium perenne L.) and annual ryegrass (Lolium multiflorum Lam.) since its inception by Dr. G. Gentner of Germany in 1929. This test allows for a large percentage of fluorescent ryegrass seedlings to be readily distinguished from non-fluorescent seedlings by a distinctive yellowish-blue glow under ultraviolet light. This glow is caused by an alkaloid called annuloline, which is leaked from the roots of developing seedlings onto a white substrate during germination. Recently, the subject of terminating a ryegrass root fluorescence test early has emerged as a topic of interest to many seed laboratories in the United States.

Current AOSA (2005-2006) rules state that the ryegrass fluorescence test is to have two counts: one at 8 and the other at 14 days. If the analyst suspects dormancy, the appropriate dormancy breaking techniques shall be used. The time spent breaking dormancy is not included in the required 14-day test. Neither the International Seed Testing Association nor the Association of Official Seed Analysts Rules makes any provision for shortening the fluorescence test, even if it is believed that maximum fluorescence results have been reached before the test's final count date. The Seed Regulatory and Testing Branch follows the Federal Seed Act Regulations which specify that the test go the entire 14 days so that every seed is given a chance to express any fluorescence trait. In our tests, a significant number of seedlings develop fluorescence after the 8-day evaluation.

Seed science, like all other fields, is strongly reliant on test reproducibility. If the procedure for the ryegrass fluorescence test is followed according to established protocol, variation in results should be limited.

For information regarding this article, contact Botanist Ernest Allen at (704) 810-8873; ernest.allen@usda.gov.

RYEGRASS FLUORESCENCE LIST

As of August 28, 2006, there are six new perennial ryegrass fluorescence level descriptions that were successfully reviewed by the Association of Official Seed Certifying Agencies (AOSCA)-National Grass Variety Review Board (NGVRB). The complete ryegrass fluorescence list can be accessed directly on the AOSCA Web site: http://www.aosca.org/forms.html. The next update for ryegrass varietal fluorescence level descriptions is scheduled for February 2007.

For information on this article, contact Dr. Neal Foster, AOSCA-NGVRB Chairman, c/o South Dakota Crop Improvement Association, (605) 688-4606; neal.foster@sdstate.edu.

BROMUS IDENTIFICATION REFEREE 2005-6

At the 2006 joint annual meeting of the Association of Official Seed Analysts (AOSA) and Society of Commercial Seed Technologists (SCST) held in Indianapolis, IN, Seed Regulatory and Testing Branch Botanist Pattsy Jackson presented the results of the northeast region's *Bromus* seed identification referee. Seeds of six *Bromus* species were sent to 27 laboratories for identification. A total of 45 analysts from 16 laboratories participated. The following *Bromus* species were included in the referee: *B. catharticus, B. hordeaceus, B. inermis*, *B. japonicus*, *B. marginatus*, and *B. secalinus*. Of these six, *B. inermis* was correctly identified by all participants. The species which presented the most difficulty in identification was *B. japonicus*. The remaining four *Bromus* species were correctly identified by 70-95 percent of the participants. Jackson also presented a poster on "Characteristics for Differentiating Various *Bromus* Species" at the meeting's Seed Forum. *Bromus* seed identification was chosen again for the 2006-7 referee for the northeast region.

For information regarding this article, contact Botanist Pattsy Jackson at (704) 810-8883; pattsy.jackson@usda.gov.

PLANT DOCTOR'S PROGNOSIS

Seed Regulatory and Testing Branch Plant Pathologist Sandra Walker was asked to reactivate the Association of Official Seed Analysts (AOSA) Seed Pathology Sub-committee during the joint Annual Meeting of AOSA/Society of Commercial Seed Technologists (SCST)/Association of Official Seed Certifying Agencies in Indianapolis, June 2006. It was agreed that membership would be open to anyone from all three organizations.

SCST Executive Director Anita Hall has created a Web page for the Seed Pathology Sub-committee where information on seed health testing is posted (http://www.aosaseed.com/pathology_committee.htm).

Cindy Finneseth (cindy.finneseth@uky.edu) reported on problems recently encountered with *Fusarium* infested seeds in wheat germination tests. When infested seeds decreased the percent germination, the laboratory treated some seeds with fungicide and ran a paired germination test on both treated and untreated seeds. The results of both germination tests were reported. The committee agreed to work on a project to determine an alternative method for conducting germination tests when pathogens or saprophytes affect results and to present a suitable method at the next meeting. Details on the methods used by laboratories are welcome; send information to Cindy Finneseth or to Sandra Walker at sandra.walker@usda.gov.

A question was asked about the health hazards to seed analysts who are exposed to *Aspergillus flavus* spores. In some germination tests, *Aspergillus* grows on the seeds and when towels are unrolled, the spores become airborne. The committee agreed to investigate the hazards of exposure to *Aspergillus* and other fungi which produce large quantities of spores which easily become airborne and to discuss guidelines for the safe handling of such germination towels and the personal protective equipment that can be worn. See the Seed Pathology Web site for more information.

Anyone who is interested in becoming a member of the Seed Pathology Sub-committee and/or who has knowledge to contribute to these projects or has questions about seed health testing should contact Plant Pathogist Sandra Walker at (704) 810-7268; sandra.walker@usda.gov.

AOSA RULE CHANGE FOR UNIFORM BLOWER CALIBRATION PROCEDURE

A change in the Association of Official Seed Analysts (AOSA) calibration procedure for uniform blowers took effect October 1, 2006. The calibration is performed as before, using calibration samples, but once the optimum uniform blowing point is determined for a species, an anemometer is used to measure the air velocity (m/s) at that particular gate setting. Calibrations may then be verified at any time, by checking the equivalent air velocity at the established setting, for the species being tested. If the velocity has changed, it is reset by adjusting the gate setting. The complete calibration procedure is only repeated following blower repair or when inaccurate purity separations or other problems are suspected. The change applies to General blowers only and is applicable to all species requiring the uniform blowing procedure.

The procedure is expected to save time and expense, and improve the accuracy, repeatability, and standardization of results between laboratories by: 1) eliminating or reducing variation between blowers due to uncontrollable differences in fan speed, motor speed, tube shape etc.; 2) minimizing problems due to varying age and/or condition of calibration samples; and 3) the establishment of a relatively quick and easy method for calibration verification and correction.

For information about AOSA Rules, see their Web site at http://aosaseed.com.

For information regarding this article, contact Botanist Sandy Dawson at 704-810-7270; sandy.dawson@usda.gov.

TZ TESTING UNDER THE FEDERAL SEED ACT

When conducting a germination test according to the Federal Seed Act (FSA) Regulations, all seeds other than hard seeds that are viable and yet fail to germinate when provided the specified germination conditions for the seed in question, are to be considered dormant (Section 201.57a). The FSA Regulations indicates four methods for determining whether the ungerminated seeds are viable, and therefore dormant: cutting test, tetrazolium (TZ) test, scarification, or application of germination promoting chemicals (201.57a(a)). The Seed Regulatory and Testing Branch (SRTB) prefers the use of the TZ test to determine dormancy. The TZ test provides rapid results, however, preparation of the seeds can be labor intensive and correct interpretation of the results requires some practice.

Paragraph (b) of section 201.57a in the FSA Regulations lists the kinds that require a dormant seed determination at the end of a germination test. These are: bahiagrass, basin wildrye, big bluestem, little bluestem, sand bluestem, yellow bluestem, bottlebrush-squirreltail, buffalograss, buffelgrass, galletagrass, forage kochia, blue grama, side-oats grama, Indian ricegrass,

johnsongrass, sand lovegrass, weeping lovegrass, mountain rye, sand dropseed, smilo, switchgrass, veldtgrass, western wheatgrass, and yellow indiangrass. This does not mean that kinds not included in this list cannot be tested for dormancy. For example, a dormancy test may be useful if a customer questions a low germination test result.

It is important to note that a TZ test is not a substitute for a germination test. The TZ test cannot distinguish between seed that would germinate under normal conditions and dormant seed. Also, the TZ test cannot detect pathogens in the seed which could interfere with germination and cause abnormal seedling development. The exceptions to this are freshly-harvested Kentucky bluegrass or sugar beets transported during the months of July, August, and September. Section 201.20 of the FSA Regulations states that for these kinds, a percentage of germination is not required on the label. Due to the long germination period of these kinds, a TZ test may be substituted for a germination test for labeling purposes, provided that a germination test has been initiated and that the results confirm the TZ results.

For information regarding this article, contact Botanist Todd Erickson at (704) 810-7266; todd.erickson@usda.gov.

RESERVE SEED COLLECTION

The Reserve Seed Collection is a collection of more than 600 different species of agricultural, vegetable, tree, and flower seeds that are available from the Seed Regulatory and Testing Branch (SRTB) to augment other seed testing laboratories' seed herbariums or for addition to seed analysts' individual collections. The species in the Reserve Seed Collection are in numerical order respective to an organized list that is found on the SRTB Web site, www.ams.usda.gov/lsg/seed/reserve.htm. Available species are in a numbered list by scientific names correlating to the seeds on file. The purpose of the collection is to provide State, commercial, and foreign seed analysts with seeds to enhance seed identifications at their laboratories. This is a complimentary service. We also appreciate donations of any seeds that can replenish our supply, as well as add more species to the Reserve Seed Collection.

To have requests filled, customers should provide envelopes labeled with the numbers (placed in numerical order) and corresponding scientific names. Notation is made on the list as to which species we have a limited supply of. We ask that no more than 150 requests be sent at a time.

For information regarding the Reserve Seed Collection, contact Biological Laboratory Technician Anitra Walker at (704) 810-7269; anitra.walker@usda.gov.

SERVICE TESTING SAMPLES

The Seed Regulatory and Testing Branch (SRTB) laboratory tests agricultural and vegetable seeds. This is a voluntary service available to anyone for a fee. The Service Testing Fees chart, available on our Web site, shows the charges per hour and the minimum size sample, per kind of seed, needed for testing. The test results are reported in a USDA Seed Analysis Certificate. The following list reflects available tests that may be conducted on the submitted samples:

Purity
Germination
Noxious-weed seeds
Moisture content
Seed count

Conductivity (on pea seed)
Pathogens

Visit the Web site at: http://www.ams.usda.gov/lsg/seed/servicetesting.htm

In order to avoid delays in testing, seed companies should furnish the following information (if applicable) with their sample:

- Company name and address - If this is the first time the company has submitted a sample, the SRTB will need the company's Federal Tax ID number and a signed letter indicating who will be responsible for billing.
- Kind and variety
- Lot number – Note that the lot number **must** be provided (and **must** match the lot number supplied on accompanying paperwork). If the lot number supplied on the accompanying paperwork is correct but does not match the lot number on the supplied sample, this will delay the test until the laboratory receives a sample with the correct lot number.
- Other identifying marks (e.g. letter of credit number)
- Quantity represented by the sample or number of seeds - The amount represented **must** be supplied and cannot be changed once the sample has been submitted for testing.
- Size of shipment, or number of seeds (if not the same as total quantity represented)
- Export to which country – This is especially necessary when testing for noxious-weed seeds.
- Testing rules needed - International Seed Testing Association (ISTA), Association of Official Seed Analysts (AOSA), or Federal Seed Act (FSA)
- Requested tests such as germination, purity, noxious-weed seed exam, moisture, pathology, etc. – Please note that a four-part purity test consists of pure seed, inert matter, other crop seeds, and weed seeds; germination, noxious-weed, pathology, etc. are separate tests. The purity test does not automatically include a noxious-weed seed exam. If needed, a noxious-weed seed exam must be specifically requested. The SRTB laboratory only performs those tests **specifically requested by the customer in writing**. If a moisture test is requested, the seed sent in for the moisture test should be in a moisture-proof container (plastic bag, etc.).
- Seed treatment substances, if any – If the seed is treated, the name of the treatment is needed for the safety of SRTB personnel and so it can be stated on the USDA Seed Analysis Certificate.
- Special Instructions
- Contact person's name, phone number, and fax number
- The SRTB laboratory also requires how, where, and to whom the certificates should be returned; i.e. by mail, by courier (if FedEx, UPS, etc. – please provide the company's courier account number to be billed).

Send Service Testing samples to:

Testing Section
Seed Regulatory and Testing Branch
801 Summit Crossing Place, Suite C
Gastonia, North Carolina 28054-2193
Phone: 704-810-8870, Fax: 704-852-4189

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Remember to update SRTB with your new contacts or any other changes to your existing account such as address, telephone numbers, mailing instructions, etc. Contact Carolyn Camidge at (704) 810-8881; carolyn.camidge@usda.gov

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For information regarding this article, contact Carolyn Camidge at (704) 810-8881; carolyn.camidge@usda.gov.

SUBMITTING FEDERAL SEED ACT COMPLAINTS

In order for the Seed Regulatory and Testing Branch to successfully process Federal Seed Act (FSA) cases, certain information is necessary. We have noticed that some of the samples/complaints that we receive are missing this information. As a reminder to all State seed control programs that submit samples for testing in conjunction with FSA complaints, the following information should accompany the samples:

- interstate shipper information
- a copy of the label that was on the seed at the time of the alleged violation
- the State laboratory test results
- list of the correct names of the kind, variety, and noxious-weed seeds
- description of the alleged violations

Missing or incomplete information causes delays in timely processing of FSA complaints. We appreciate the States' cooperation as it enables us to process samples faster and without delay. Our Web site has links to the FSA and Regulations, found at: http://www.ams.usda.gov/lsg/seed/seed_pub.htm#Regulations.

Send FSA complaint samples with paperwork to:

Testing Section
Seed Regulatory and Testing Branch
801 Summit Crossing Place, Suite C
Gastonia, North Carolina 28054-2193
Phone: 704-810-8871, Fax: 704-852-4109

For information regarding this article, contact Branch Secretary Winston Robinson at 704-810-7263; winston.robinson@usda.gov.

TIMELINESS IN SEED VIOLATION CASES

A matter of concern to all seed control officials is the subject of timeliness in the disposition of seed labeling violations. The amount of time involved, from the moment of sampling to the final resolution of the case, may be one indicator of efficient enforcement of seed laws and regulations. The Seed Regulatory and Testing Branch (SRTB) strives to process such violations in a fair, uniform, and timely fashion.

A recent SRTB program evaluation suggests concern by State seed control officials about the timely handling of seed labeling violations. SRTB shares this concern; one of the major objectives of our organization, as stated in our Quality Management System, is to resolve Federal Seed Act (FSA) cases in a timely manner. This article attempts to shed light upon the time factors involved in the handling of a case and provides some indication of the timeliness of such action.

It appears that the process can be considered in terms of two phases: 1. the amount of time from the sampling of the seed until receipt at SRTB; and 2. the amount of time from receipt of the alleged violation until action is taken. In addition, the latter can be further examined in relation to the severity of the labeling violation.

In an attempt to better understand these phases, we have analyzed data from the past five years. The data used is not inclusive of all cases but rather represents a sampling. Approximately 566 cases were examined to gather the necessary data. The information obtained from this examination is offered both for its explanatory value, i.e., insight into where we have been and where we are going, and to ascertain whether there is room for improvement.

Phase 1 Sampling to Receipt

This phase constitutes the period of time from initial sampling by a State seed inspector until receipt at SRTB. Obviously, it encompasses the period including the sample collection, delivery from the inspector to the appropriate state office, the testing and evaluation period, and the delivery from the State to the SRTB.

Clearly, the above steps can vary greatly from one State to another, and it is up to the individual State to determine if its operations are timely. Data for the past five years, taken in its entirety, is consistent (see Table 1). It appears that, on average, 3-4 months pass from sampling to receipt of the sample at the SRTB. There is only slight variation in these figures in that five-year period. Since this is an average, some States are actually under this time while others take more time.

TABLE 1 Time from initial sampling by State until action by SRTB

Fiscal Year	From sampling until receipt (mos)	From receipt until action (mos)	Total time from initial sampling until action (mos)
2001	3.7	21	25
2002	3.2	21	24
2003	3.6	17	21
2004	3.9	14	18
2005	3.7	10	14

Phase 2 Processing

This phase involves the investigation and resolution of seed labeling violations at SRTB. It includes the processing of the submitted sample and paperwork, the gathering of records from interstate shippers, the testing of the samples, the evaluation of the case, and determining the final course of action.

Again referencing Table 1, the data indicates that the time period involved in the processing of cases after receipt at SRTB has been improving. While 2002 (all references to year refers to fiscal years) was unchanged from 2001, cases from 2002 onward show a marked decline in the length of time involved. Whereas in 2002 all cases averaged 21 months for completion, in 2005 that had fallen to 10 months.

In summary, the total time from the sampling of the seed until action was taken has shown a progressive decline in the past five years. On average, seed labeling violations were completed in 14 months in 2005, whereas it took 25 months in 2001.

Severity of the violation

While it is useful to look at the overall period of time for processing of FSA cases, a further evaluation in terms of the seriousness of the violation could provide additional insight. As shown in Table 2, the length of the processing phase is directly related to the seriousness of the violation. We will first look at cases where the labeling violation was of a less serious nature.

Table 2 shows that the time for resolving less serious violations rose from 2001 to 2003 and then trended downward. The most likely explanation for the rise was the SRTB's move from Beltsville, MD to Gastonia, NC. The preparation for the move and the move itself certainly could have been factors in the increased time. In addition, the retirement of experienced staff members during this same period almost certainly was an additional factor. The data since 2003, however, indicates a downward trend. The completion of the move and subsequent hiring and training of new employees seem to have resulted in substantial reductions in the time required for handling less serious violations.

The cases with less serious violations, which are typically handled in a shorter time frame, were apparently more affected by the move and personnel changes than were more serious labeling violations which require a longer processing time. Evidence of this is that the time required for resolving serious seed violations did not experience an increase in 2002 and 2003 but continued declining steadily. Whereas in 2001, it took an average of 28 months for serious violations from receipt at SRTB until action was taken, that had fallen to 14 months in 2005.

TABLE 2 Time from receipt until action by SRTB based on the seriousness of the violation

Fiscal Year	Less serious violations (mos)	Serious violations (mos)
2001	3.4	28
2002	6.8	26
2003	9.9	21
2004	4.3	18
2005	1.5	14

The question might be raised as to why the considerable time difference between less serious and serious violations exists. One factor is the policy of SRTB regarding serious seed labeling violations. Policy is, and has been, that serious seed violations involve more than just a single instance. Investigation of serious seed violations includes an effort to see if a pattern of such violations exists on the part of a company or shipper over a period of time. Consequently, an initial labeling violation may not be resolved for many months.

Other factors involved in serious seed labeling violation cases which may not be required of less serious violations also include the acquisition of records from the interstate shipper and testing of the seed sample at the SRTB Lab. These steps also may add more months to the process. Hopefully, this offers an explanation as to why serious seed violations generally require much longer periods of time.

Another area which tends to lengthen the process is the matter of trueness-to-variety tests. Obviously, growing plants in the field is a seasonal prospect and obtaining results from such and relaying these results can be a matter of many months.

Summary

We at the SRTB are taking, and have taken, steps to lessen the amount of time involved in our process and to better explain how timeliness is affected by the nature of the seed violation. As the Tables suggest, there has been substantial improvement in the amount of time for handling cases. There are a variety of reasons for this improvement, including: 1. improved documentation of labeling violations and the provision of more records on the part of state seed officials to the SRTB (thus allowing for speedier processing by SRTB); 2. an increase in staff and the amount of training for the SRTB personnel; and 3. increased efficiency in the handling of cases through a number of changes (including, for one, adoption of better tracking techniques).

In addition, we have adopted the practice of sending to State seed control officials a letter after our testing is complete indicating that we are holding the case while determining if a pattern of violations exists.

In summary, we feel that the SRTB has made, and continues to make, strides for the timely handling of seed violations. There has been considerable improvement and it is hoped that the timely handling of cases is maintained and even improved upon. The margin for further improvement, however, is much less than it has been and while incremental improvement remains possible, the large reductions of recent years are unlikely to be repeated.

For information regarding this article, contact Seed Marketing Specialist Gene Wilson at (704) 810-8888; gene.wilson@usda.gov.

FEDERAL SEED ACT VIOLATION AND SEED SAMPLING

The Seed Regulatory and Testing Branch (SRTB) staff routinely discusses Federal Seed Act (FSA) labeling violations with seed company personnel. The purpose of these discussions is to discover the probable causes of these labeling violations and work with the companies involved to eliminate them in the future. During these discussions, it became apparent that in a number of instances improper sampling of the seed lot contributed to the labeling violation. If a sample obtained to be tested for labeling purposes does not properly represent the seed lot, the test results may not accurately reflect the quality of the lot. This situation could lead to the lot being mislabeled.

In some cases, too few primary samples were taken to adequately represent the lot. The FSA Regulations and the AOSA Rules for Testing Seeds both provide instructions for the number of primary samples to obtain for lots of various sizes. For lots of six bags or fewer, each bag should be sampled, but at least five primary samples must be taken. For lots of more than six bags, five bags plus at least 10 percent of the number of bags in the lot must be sampled. Regardless of the lot size, it is not necessary to sample more than 30 bags.

In other cases, the individual bags of seed were improperly sampled. When sampling bags of seed with a "sleeve type" trier, the trier should be inserted into the bag diagonally and be long enough to reach the entire diagonal length of the bag. The openings of the trier should be at least twice the size of the seed being sampled. The trier should be gently closed after obtaining the sample to avoid damaging the seed. Very chaffy seed should be sampled by hand. This procedure consists of inserting a hand into the bag of seed, with fingers together, closing the hand and removing the sample. The "thief trier" should not be used because, due to its design, this trier will draw the majority of the sample from the edge of the bag. A visual examination of each primary sample can be helpful to the seed labeler by providing information about the presence of weed seed or other contaminants in the lot. The primary samples should be combined, thoroughly mixed and divided, with a portion sent for laboratory testing and a portion retained as a file sample.

When sampling bulk containers or bins, the number of primary samples taken should be equal to the number of samples that would be taken if the seed were in bags. A longer "grain type" trier should be used in an attempt to reach the bottom of the container.

Automatic samplers can provide a representative sample of a lot, provided they are properly calibrated. These samplers should be calibrated to insure that the required number of primary samples are taken and that the samples taken are evenly spaced throughout the lot.

The SRTB can be contacted for additional information about seed sampling techniques and procedures. For information regarding this article, contact Branch Chief Richard Payne at (704) 810-8871; richard.payne2@usda.gov.

QUESTIONS AND ANSWERS

Title V Varieties in Mixtures

Q. Can I blend a Plant Variety Protected (PVP) Title V variety with other varieties of the same kind to create a named blend with the Title V variety clearly identified on the label as a component of the blend? Can the owner of the variety prevent me from using the product in my blend once I have purchased the certified seed? If so, what is the procedure for denying permission for that use? Also, would I be in compliance if I list the percentage of each variety on the tag?

A. Labeling requirements for seed mixtures are addressed in the Federal Seed Act (FSA). Section 201(a)(1) of the FSA states, in part, "The name of the kind or kind and variety for each agricultural seed component present in excess of 5 per centum of the whole and the percentage by weight of each:..." Section 201(a)(1)(C) of the FSA states, "seed mixtures intended for lawn and turf purposes shall be designated as a mixture on the label and each seed component shall be listed on the label in order of predominance;"

This means that to be in compliance with the FSA, all components of a grass seed mixture in excess of 5 percent must be listed in order of predominance along with the percentage by weight of each component.

Section 501 of the FSA states, "It shall be unlawful in the United States or in interstate or foreign commerce to sell or offer for sale or advertise, by variety name, seed not certified by an official seed certifying agency, when it is a variety for which a certificate of plant variety protection under the Plant Variety Protection Act specifies sale only as a class of certified seed: Provided, that seed from a certified lot may be labeled as to variety name

when used in a mixture by, or with the approval, of the owners of the variety."

This means that certified seed of a PVP Title V variety can be used in a mixture and labeled by variety name, but only by the owner of the variety or with the approval of the owner of the variety.

Origin Labeling

Q. What percent of seed of foreign origin may be blended with U.S. origin seed, and still be labeled "U.S. Origin?"

A. Section 101(10) of the Federal Seed Act (FSA) contains the following definition: "The term "origin" means the State, District of Columbia, Puerto Rico, or possession of the United States, or the foreign country, or the designated portion thereof, where the seed was grown."

Section 201(a)(3) of the FSA contains the requirement for labeling the origin of certain agricultural kinds of seed designated by the Secretary of Agriculture that are shipped in interstate commerce "if the origin is known, and if each such seed is present in excess of 5 per centum."

Section 201.14 of the FSA Regulations states in part "Alfalfa, red clover, white clover, and field corn (except hybrid seed corn) shall be labeled to show: (1) The origin if known…" and "Whenever such seed originates in more than one State, the name of each State and the percentage of seed originating in each State shall be given in the order of predominance."

This means that if present in excess of 5 percent, the percentage of alfalfa, red clover, white clover, or non-hybrid field corn seed originating in a foreign country must be shown on the label along with the name of the country of origin.

Section 201.8 of the FSA Regulations states in part, "The label may contain information in addition to that required by the Act, provided such information is not misleading."

The origin of seed other than alfalfa, red clover, white clover, and non-hybrid field corn is not required labeling information. However, if present on the label, the origin of these other kinds of seed must not be misleading. Section 201(a)(3) provides guidance in that this section of the FSA requires seed of certain kinds in excess of 5 percent to be labeled as to origin. Therefore, if the seed in question is a kind other than alfalfa, red clover, white clover, and non-hybrid field corn, and is labeled as "US ORIGIN," at least 95 percent of the seed must be of U.S. origin to be in compliance with the FSA.

Variety Names of Imported Seed

Q. Do varieties of seed need to be registered before importing them into the U.S. and selling them?

A. There is no mandatory variety or variety name registration system in the U.S. Therefore, neither varieties nor variety names have to be registered prior to their importation and sale in the U.S. However, the name of an imported variety cannot be the same as the name of an existing variety sold in the U.S.

The Seed Regulatory and Testing Branch (SRTB) maintains a variety name database that serves as a reference source for enforcing the variety naming and labeling provisions of the FSA. We will also assist seed companies with choosing names for their new varieties in an effort to prevent FSA violations. When a new variety (including an imported variety) is sold in the U.S., it is important that the name of the new variety does not duplicate the name of an existing variety because the FSA prohibits the use of the same name for two different varieties.

The SRTB Web site, www.ams.usda.gov/lsg/seed.htm, has a link to the names in our variety name database. We encourage seed companies to check proposed names for new varieties through our Web site and if there are questions about the use of a variety name, our staff will provide assistance.

Seed Treatment Efficacy

Q. If a seed sample was treated with a pesticide three years ago and the efficacy has now been greatly reduced, is the seller still required to label the seed product as being treated? The staining is still very visible but the fungicide appears to be no longer active.

A. The Federal Seed Act does not regulate the staining of chemically treated seed. The staining requirements are regulated by the Federal Drug Administration. If seed is chemically treated, the seed has to be labeled with a statement such as "Treated with (name)."

If the amount remaining with the seed is harmful to "humans or other vertebrate animals," the statement "Do not use for food, feed, or oil purposes" must be on the label.

If the chemical treatment is an Environmental Protection Agency Category I treatment and any amount remains on the seed, the label must contain a statement in red letters "Poison" and a skull and crossbones.

Sect 201.58c cites a bioassay method in an AOSA handbook for detecting seed treatment.

The key question is what is the treatment? This would dictate how the seed must be labeled.

For information regarding the Questions and Answers, contact Branch Chief Richard Payne at (704) 810-8884; richard.payne2@usda.gov.

FEDERAL SEED ACT CASES SETTLED

The following cases were settled administratively under the Federal Seed Act between April 1 and August 31, 2006. Under the administrative settlement procedure, the Seed Regulatory and Testing Branch and the firms agreed to settle the cases for the amount specified, with the firms neither admitting nor denying the charges. Official Program Announcements on each of these cases is accessible on the following Web site: http://www.ams.usda.gov/news/newsrel.htm:

Ferry-Morse Seed Company, Fulton, KY, has paid $875 for a case involving two seed shipments. The alleged violations, while not the same for both shipments were, false labeling as to variety name and germination; and failure to keep and/or supply a complete record of the seed. Seed regulatory officials in Texas cooperated in the initial sampling and inspection.

Johnston Seed Company, Inc., Ashburn, GA, has paid $1,250 for a case involving four seed shipments. The alleged violations, while not the same for all shipments were, false labeling as to pure seed and inert matter percentages, the presence of noxious-weed seed, and date of test; and failure to keep and/or supply a complete record of the seed. Seed regulatory officials in Alabama and Florida cooperated in the initial sampling and inspection.

James Reneau Seed Company, Shamrock, TX, has paid $2,325 for a case involving three seed shipments. The alleged violations, while not the same for all shipments were, false labeling as to germination percentages and noxious-weed seed; failure to label as a mixture, the name and address of the shipper, the presence of noxious-weed seeds; failure to test for germination prior to interstate shipment; and failure to keep and/or supply a complete record of the seed. Seed regulatory officials in Florida, Georgia, and Missouri cooperated in the initial sampling and inspection.

OreGro Seeds, Inc., Albany, OR, has paid $875 for a case involving three seed shipments. The alleged violations, while not the same for all shipments were, false labeling as to pure seed, other crop seed, and weed seed percentages, and test date; and failure to show required information for a seed component in a mixture. Seed regulatory officials in Texas cooperated in the initial sampling and inspection.

ProSeeds Marketing, Inc., Jefferson, OR, has paid $2,450 for a case involving four seed shipments. The alleged violations, while not the same for all shipments were, false labeling as to germination, pure seed, other crop seed, and weed seed percentages; failure to test for germination prior to interstate shipment; and failure to keep and/or supply a complete record of the seed. Seed regulatory officials in Arkansas and Ohio cooperated in the initial sampling and inspection.

Richardson Seed, Inc., Vega, TX, has paid $1,050 for a case involving three seed shipments. The alleged violation was false labeling as to varietal purity. Seed regulatory officials in Oklahoma and Texas cooperated in the initial sampling and inspection.

Schallert Brothers Seed Company, Purdy, MO, has paid $1,100 for a case involving three seed shipments. The alleged violations, while not the same for all shipments were, false labeling as to pure seed, inert matter, and other crop seed percentages, and noxious-weed seed. Seed regulatory officials in Alabama, Georgia, and Kentucky cooperated in the initial sampling and inspection.

Segrest Feed and Seed Company, Inc., Slocomb, AL, has paid $1,625 for a case involving three seed shipments. The alleged violations, while not the same for all shipments were, false labeling as to germination percentage, noxious-weed seed, and variety name; failure to label the name and address of the shipper; and failure to keep and/or supply a complete record of the seed. Seed regulatory official in Georgia cooperated in the initial sampling and inspection.

Smith Seed Services, Halsey, OR, has paid $2,025 for a case involving three seed shipments. The alleged violations, while not the same for all shipments were, false labeling of inert matter and weed seed percentages and noxious-weed seed; and failure to test for germination prior to interstate shipment. Seed regulatory officials in Arkansas, Georgia, and Virginia cooperated in the initial sampling and inspection.

PLANT VARIETY PROTECTION CERTIFICATE STATUS

Check the status of certification and search for expired certificates by accessing the Plant Variety Protection Office's Web site and entering their Public Access Database: http://www.ams.usda.gov/science/pvpo/PVPindex.htm.

CHANGES TO THE FEDERAL PURCHASE SYSTEM

Effective April 1, 2006, changes to the Federal purchase system have required all current and new vendors to register on the Central Contractor Registration (CCR) site, if they are to do business with the Federal Government. This requirement also pertains to the States that the Seed Regulatory and Testing Branch works with in support of Federal Seed Act training/testing as outlined in Cooperative Agreements and trueness-to-variety testing. If you have any questions regarding the new requirement or do not know if your financial office has taken care of this requirement, please review the link below and forward as needed. (http://www.usda.gov/procurement/business/ccr_orca.htm#ccr).

NEW STAFF

Nicole Abrams-Kelly joined our staff in May, filling the vacant biological science laboratory technician position. Abrams-Kelly has been with AMS for three years, previously with AMS, Science and Technology, National Science Laboratory. She holds a BS in Biology from UNC, Greensboro, NC. See the Directory of Services for contact information.

Karen Sussman is our new management analyst. She had been the branch secretary since June 2003. Sussman will take on additional responsibility in regards to branch fiscal concerns and quality control. See the Directory of Services for contact information.

In October, Winston Robinson was selected for the branch secretary position. He has been with the branch since January 2004, providing regulatory support as an office automation assistant. In his new position, he will provide administrative support to the branch chief.

For information regarding this article, contact Management Analyst Karen Sussman at 704-810-7272; karen.sussman@usda.gov.

NEW CERTIFIED SEED ANALYSTS

Congratulations to the three Seed Regulatory and Testing Branch (SRTB) botanists who recently attained the status of Certified Seed Analysts (CSA). SRTB Botanists Ernest Allen, Sandy Dawson, and Todd Erickson passed both the purity and germination CSA examination given by the Association of Official Seed Analysts. Their diligent study, coupled with training provided by other SRTB staff, led to this achievement for these botanists who joined SRTB in 2004.

For information regarding this article, contact Laboratory Supervisor Susan Maxon at (704) 810-8877; susan.maxon@usda.gov.

VISITOR FROM JAPAN

USDA AMS was pleased to welcome and host Yoshihide Tsuji from Japan. He is an employee of the Japanese OECD Designated Authority and was visiting Idaho, Oregon, and Washington seed production facilities. While on this trip, he also visited the Canadian Food Inspection Agency and the USDA AMS Seed Regulatory and Testing Branch in Gastonia, NC. The purpose of his visit was to strengthen trading ties and to develop an understanding of the U.S. production and certification system. He visited several seed production fields, laboratories and facilities. He said he now has a greater appreciation for the excellent quality programs and seed arriving into Japan.

For information regarding this article, contact OECD Program Manager Perry Bohn at (704) 810-7262; perry.bohn@usda.gov.

"To own a bit of ground, to scratch it with a hoe, to plant seeds and watch the renewal of life—this is the commonest delight of the race, the most satisfactory thing a man can do."

Charles Dudley Warner

(Contributed by Seed Regulatory and Testing Branch Botanist Sandy Dawson.)

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